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ManTech process saves millions of dollars

by Gary Cunningham, Materials and Manufacturing Directorate

WRIGHT-PATTERSON AFB, Ohio – A manufacturing process improvement for the composite body of the Joint Air-to-Surface Standoff Missile (JASSM), will save more than $19 million over the production life of the missile, according to representatives of the Manufacturing Technology (ManTech) Division of the Air Force Research Laboratory's Materials and Manufacturing Directorate.

The ManTech-led cooperative effort, officially called the JASSM Composite Body Rapid Response Process Improvement (R^2PI) program, included representatives of Lockheed Martin Corporation and Fiber Innovations, Inc. (FII).

JASSM is a joint Air Force-Navy program developed and produced by Lockheed-Martin Integrated Systems. It employs stealth to penetrate enemy air defenses at ranges of more than 200 miles, and can be launched off most types of aircraft in the Air Force inventory. JASSM is designed to destroy high-value, well-defended, fixed and moving targets.

Most of the surface area and load bearing structure of each JASSM is manufactured using a braided composite process to place fibers in their proper orientation and shape. The majority of these parts are then molded using the Vacuum-assisted Resin Transfer Molding, or VaRTM, process.

A costly, hands-on trimming procedure was required after the VaRTM process, however. This led to ManTech approving a plan for Lockheed-Martin, in conjunction with FII, to develop the JASSM Composite Missile Body R^2PI Program. By eliminating the post-VaRTM trimming steps, R^2PI would succeed in reducing the manufacturing risk to cost and schedule goals for JASSM by improving the manufacturing process. Cost and schedule goals are associated with reducing manufacturing hours, cycle time, scrap and rework.

This was accomplished through R^2PI by developing net-shaped preforms for fuselage components, and improving the net edge molding of the upper and lower composite fuselage by improving the inner mold line dimensional control and optimizing the resin infusion through automated temperature and pressure controls.

Results of the ManTech-led R^2PI program exceeded expectations. The cost savings of $19 million over the life of the JASSM production helped bring the program in below its objective cost of $400,000 each (FY95 dollars). Making the JASSM more affordable led to high praise from Department of Defense and Air Force leadership.

According to an Air Force News release, Undersecretary of Defense Pete Aldridge gave the JASSM program the go ahead for low rate initial production on Dec. 21, 2001. This prompted Secretary of the Air Force, Dr. James G. Roche, to state, "JASSM is a flagship program for acquisition excellence. Not only do our combat forces get an unprecedented precision attack capability, but they get it at an affordable price never before achieved on a cruise missile program."

The Air Force plans to make the decision for full rate production in late 2003. **@**